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VALVULAR HEART DISEASE

ECHO DOPPLER ASSESSMENT OF LEFT SIDED FILLING PERFORMANCE IN SEVERE AORTIC STENOSIS

ACC Poster Contributions
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Background: Transcatheter aortic valve implantation (TAVI) has become treatment option for patients with severe aortic stenosis (AS) and multiple co morbidities. As symptoms of AS in this population may overlap with other diseases information about left sided filling performance may facilitate assessment of risk and benefit of the intervention. This study evaluated the ability of echo-Doppler estimate pulmonary capillary wedge pressure (PCWP) in patients with severe aortic stenosis.

Methods: Fifty consecutive, severe AS patients referred to TAVI underwent cardiac catheterization and transthoracic echocardiography within 24 hour. Echo-Doppler parameters of aortic stenosis severity, left ventricular systolic and diastolic function, and right sided hemodynamics were obtained. We evaluated: 1.correlation of non invasive variables with PCWP, 2. ability to estimate PCWP by integrationmod these paramenter 3. identification of patients with hemodynamic decompensation (PCWP≥20mmHg) and normal left sided filling performance (PCWP≤12mmHg).

Results: Multiple echo-Doppler variables showed significant correlation with PCWP. The ratio of early mitral inflow velocity to early diastolic velocity (E/E') of lateral annulus had a highest correlation with PCWP ($r=0.63$, $p<0.05$). By multivariate analysis we created model that closely estimated PCWP ($r2=0.93$). Peak and mean trans aortic pressure gradients, left ventricular ejection fraction, E/E' of septal and lateral mitral annulus, and tricuspid regurgitation time velocity integral were estimeted PCWP to various extent (table and equation). E/E' of lateral annulus was the only significant predictor of hemodynamic decompensation (odds ratio 1.43 (1.06-1.93), $p=0.018$). There was no echo-Doppler predictor of normal PCWP.

Conclusions: The E/E' of lateral annulus correlates well with PCWP and is the best echo-Doppler predictor of hemodynamic decompensation. Estimation of PCWP in severe AS is feasible by integration of echocardiographic variables.